

REMARKS

Claims 1 to 23 are all the claims pending in the application prior to the present Amendment.

Claims 11 and 12 have been objected to as being improper dependent claims because they fail to further limit the subject matter of the previous claim.

In response, applicants have canceled claims 11 and 12. Accordingly, this objection is moot.

Claims 10 and 22 have been rejected under the second paragraph of 35 U.S.C. § 112 as indefinite.

The Examiner states that claims 10 and 22 each contains a recitation of several different carbon blacks, and further contain the recitation “Ketjenblack.” The Examiner states that the term “Ketjenblack” is a trademark or trade name and that it is improper to use a trademark or trade name in a claim.

The Examiner further states that these claims appear to include every possible type of carbon black known, and, therefore, it is not clear how claims 10 and 22 further limit claim 9.

Finally, the Examiner states that “Ketjenblack” is a furnace black so it is already included under the term “furnace black” that is recited in claims 10 and 22. The Examiner states that the recitation of “Ketjenblack” in these claims, therefore, is unnecessary.

In response, applicants have amended claims 10 and 22 to delete the term “Ketjenblack” from these claims.

With respect to the Examiner's comment that claims 10 and 22 appear to include every possible type of carbon black that is known, and, therefore, it is not clear how these claims further limit claim 9, applicants point out that there are carbon blacks other than those set forth in claims 10 and 11, such as animal black, ivory black and vine black. The name of the black is derived from the method of manufacturing the black, and there are many different methods that can be used to form a carbon black.

In view of the above, applicants submit that claims 10 and 22 comply with the requirements of the second paragraph of 35 U.S.C. § 112 and, accordingly, request withdrawal of this rejection.

Claims 1, 5-6, 9-10, 13, 15-20 and 23 have been rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative under 35 U.S.C. § 103(a) as obvious over JP 06-122785 to Kato et al.

Applicants submit that JP '785 does not disclose or render obvious the subject matter of the above claims and, accordingly, request withdrawal of this rejection.

The present invention as set forth in claim 1 as amended above is directed to carbonaceous material for forming an electrically conductive composition, comprising a vapor grown carbon fiber, each fiber filament of the carbon fiber containing a hollow space along the filament in its interior and having a multi-layer structure, an outer diameter of 2 to 500 nm and an aspect ratio of 10 to 15,000, and graphitic particles and amorphous carbon particles, wherein the amount of the vapor grown carbon fiber is 10 to 90 mass%, the amount of the graphitic particles is 3 to 65 mass%, and the amount of the amorphous carbon particles is 7 to 35 mass%.

Thus, applicants have amended claim 1 to require the presence of both graphite particles and amorphous carbon particles, with the amorphous carbon particles being present in an amount of at least 7 mass% and the graphite particles being present in an amount of at least 3%.

Support for the 7% value with respect to the amorphous carbon particles can be found at page 20, lines 17-20 of the specification. Further, since the maximum amount of the vapor grown carbon fiber is 90 mass%, and the lowest value for amorphous carbon particles is 7 mass%, the graphite particles, therefore, would be present at a value of 3 mass%.

Thus, the carbonaceous material of the present invention contains a specific vapor grown carbon fiber, graphite particles and amorphous carbon particles, in specified amounts.

JP '785 describes an electroconductive composition containing (A) vapor grown carbon fiber, (B) carbon black, and (C) thermoplastic resin and/or thermosetting resin.

On the other hand, the present invention, as set forth in claims 1-10, relates to a carbonaceous material containing a specific vapor grown carbon fiber, graphite particles and amorphous carbon particles in specified amounts, and as set forth in claims 13 and 14, relates to an electroconductive composition containing the carbonaceous material and a resin component. The amorphous carbon particles can be carbon black. See, for example, claim 9.

Accordingly, JP '785 is different from the present invention in that the composition of JP '785 does not contain graphite particles.

Also, JP '785 does not anticipate the effect described in the present specification at page 26, lines 12-27 obtained by using graphite particles and amorphous carbon particles in combination.

In particular, when the graphite particles and the amorphous carbon particles are employed in combination, these particles exhibit effects as described below. The amorphous carbon particles, having an irregular, branched-chain structure, come into contact with the vapor grown carbon fiber, to thereby form an electrical network, whereby electrical conductivity is obtained. In addition, the graphite particles, which exhibit electrical conductivity higher than that of the amorphous carbon particles, are dispersed in micropores present between fiber filaments of the carbon fiber, and thus the electrical network is further spread, and lowering of electrical conductivity, which is caused by separation of fiber filaments which are in contact with one another, is prevented, whereby electrical conductivity is envisaged to be obtained in a constant manner.

In view of the above, applicants submit that JP '785 does not disclose or render obvious the subject matter of the present claims and, accordingly, request the withdrawal of this rejection.

Claims 2-4 and 12 have been rejected under 35 U.S.C. § 103(a) as obvious over JP '785 in view of U.S. Patent 6,489,026 to Nishimura et al.

As discussed above, claim 12 has been canceled, thus leaving claims 2-4 as being subject to this rejection.

The Examiner states that JP '785 discloses all of the recitations of the present claims, except that it does not teach a coating composition containing a boron-doped VGCF as set forth in claim 2, or the structures set forth in claims 3 and 4.

The Examiner relies on Nishimura et al to supply these teachings, and argues that it would have been obvious to employ the boron-doped VGCF of Nishimura et al in JP '785.

Claims 2-4 are dependent claims. Accordingly, applicants submit that the arguments set forth above for the patentability of independent claim 1 support the patentability of these dependent claims.

Nishimura et al relate to a vapor-grown carbon fiber, but do not disclose or suggest a carbonaceous material containing the combination of a specific vapor grown carbon fiber, graphite particles and amorphous carbon particles in specified amounts. The use of the boron-doped VGCF of Nishimura et al in JP '785 as proposed by the Examiner would not result in the subject matter of the present claims. Accordingly, the combination of JP '785 and Nishimura et al would not have led one of ordinary skill in the art to the constitution of the present invention.

In view of the above, applicants submit that JP '785 and Nishimura et al do not disclose or render obvious the subject matter of claims 2-4 and, accordingly, request the withdrawal of this rejection.

Claims 8 and 21-22 are rejected under 35 U.S.C. § 103(a) as obvious over JP '785 in view of Nishimura et al and further in view of U.S. Published Patent Application 2002/0051903 to Masuko et al.

The Examiner states that JP '785 and Nishimura et al do not disclose a composition containing boron-doped carbon black.

The Examiner relies on Masuko et al for a teaching of boron-doped structured carbon blacks, and their use with VGCF in polymer electrolytes and electrodes.

The Examiner argues that it would have been obvious to employ the boron-doped carbon black of Masuko et al in the combined teachings of JP '785 and Nishimura et al as a conductive filler.

Although Masuko et al describe a boron-doped carbon black, they do not disclose or suggest a carbonaceous material containing a specific vapor grown carbon fiber, graphite particles and amorphous carbon particles. Accordingly, the combination of JP '785, Nishimura et al and Masuko et al would not have led one of ordinary skill in the art to the constitution of the present invention.

In view of the above, applicants submit that JP '785, Nishimura et al and Masuko et al do not disclose or render obvious the subject matter of claims 8, 21 and 22 and, accordingly, request the withdrawal of this rejection.

Claims 1-7, 11, 13 and 15 have been rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent 6,627,689 to Iino et al.

As discussed above, claim 11 has been canceled, thus leaving claims 1-7, 13 and 15 as being subject to this rejection.

Iino et al '689 disclose an electroconductive resin containing (A) a graphite powder, (B) a curable resin and (C) a vapor grown carbon fiber. Iino et al are different from the present invention because Iino et al '689 do not contain amorphous carbon particles. Moreover, Iino et al '689 do not anticipate the effect described in the present specification, at page 26 lines 12-27 obtained by using graphite particles and amorphous carbon particles in combination.

In view of the above, applicants submit that Iino et al '689 do not disclose or render obvious the subject matter of claims 1-7, 13 and 15 and, accordingly, request the withdrawal of this rejection.

Claims 1, 5 and 13-15 have been rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent 6,384,128 to Wadahara et al.

Applicants submit that Wadahara et al do not disclose or render obvious the subject matter of claims 1, 5 and 13-15 and, accordingly, request the withdrawal of this rejection.

The product described in the claims of Wadahara et al consists of (A) an electrically conductive fiber, (B) a carbon powder and (C) a thermoplastic resin.

Wadahara et al disclose, at column 5, lines 32-47, vapor grown carbon fibers having a diameter of 0.01 to 1 μm . Wadahara et al also disclose at columns 21-24 the addition of optional components, such as graphite particles. Wadahara et al, however, do not disclose any working example of the use of a combination of specific vapor grown carbon fibers, graphite particles and amorphous carbon particles in specified amounts as set forth in the present claims. Accordingly, applicants submit that Wadahara et al do not disclose or suggest the present claims.

In view of the above, applicants submit that Wadahara et al do not disclose or render obvious the subject matter of claims 1, 5 and 13-15 and, accordingly, request the withdrawal of this rejection.

Claims 6, 7 and 11 have been rejected under 35 U.S.C. § 103(a) as obvious over Wadahara et al in view of U.S. Patent 6,627,689 to Iino et al.

In addition, claims 6, 8, 12, 21 and 22 have been rejected under 35 U.S.C. § 103 as obvious over Wadahara et al in view of U.S. Published Patent Application 2005/0112441 to Iino et al.

As discussed above, claims 11 and 12 have been canceled, thus leaving claims 6, 7, 8, 21 and 22 as being subject to these rejections.

Claims 6, 7, 8, 21 and 22 are dependent claims that depend, either directly or indirectly, from claim 1. Iino et al '689 and Iino et al '441 do not supply the deficiencies of Wadahara et al with respect to the recitations of claim 1.

In view of the above, applicants submit that claims 6, 7, 8, 21 and 22 are patentable over the cited references and, accordingly, request the withdrawal of these rejections.

Claims 1-5, 9-10, 13, 15 and 16 rejected have been rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent 7,122,132 to Morita et al.

Applicants submit that Morita et al do not disclose the subject matter of the present claims and, accordingly, request withdrawal of this rejection.

Morita et al describe an electrically conductive composition containing (A) a vapor grown carbon fiber, (B) carbon black, and (C) a resin. Thus, Morita et al do not disclose the use of graphite particles and, therefore, are different from the present invention.

In view of the above, applicants submit that Morita et al do not anticipate the present claims and, accordingly, request the withdrawal of this rejection.

AMENDMENT UNDER 37 C.F.R. § 1.111
Application No.: 10/540,560

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In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.


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